

FIG. 1

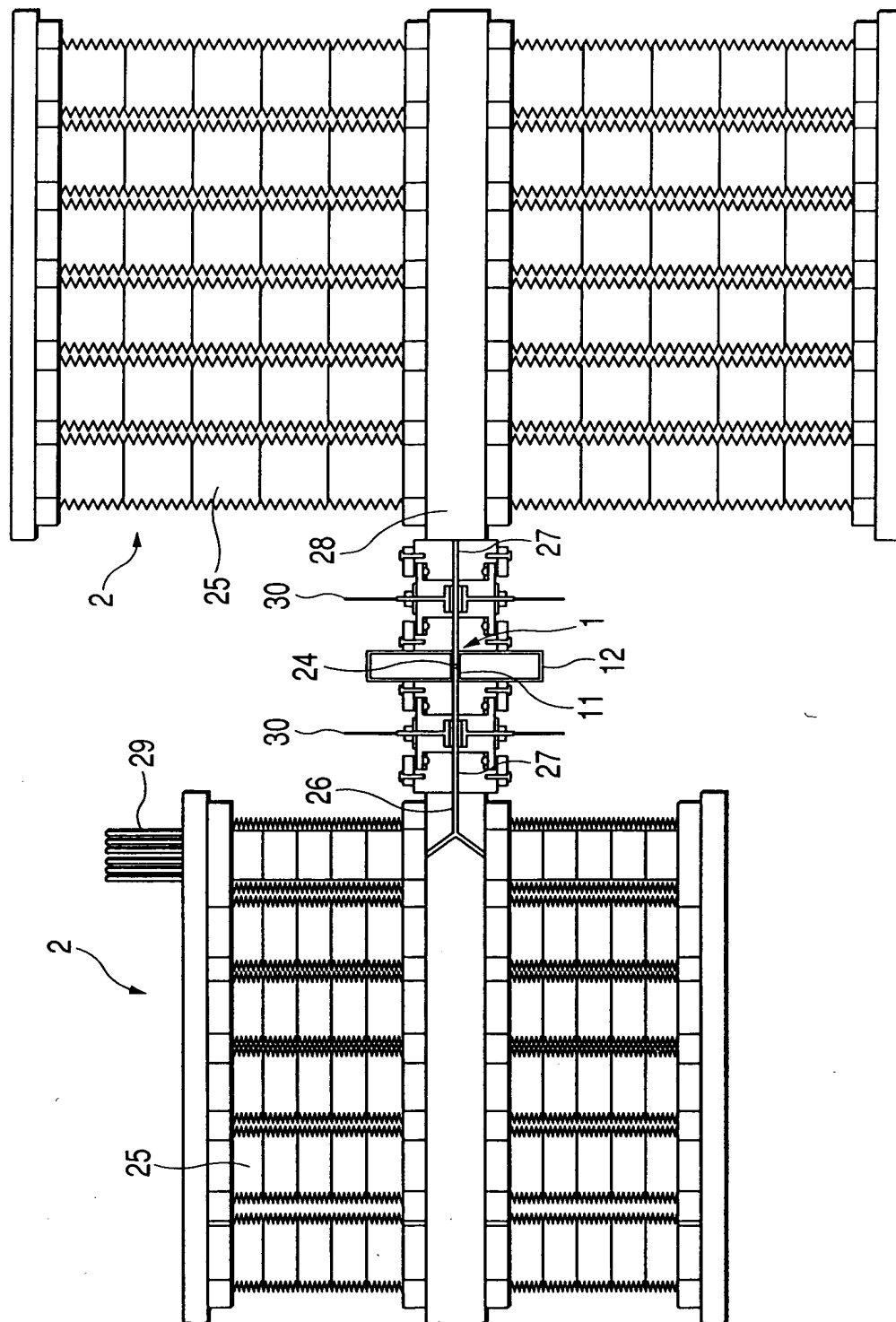


FIG. 2A

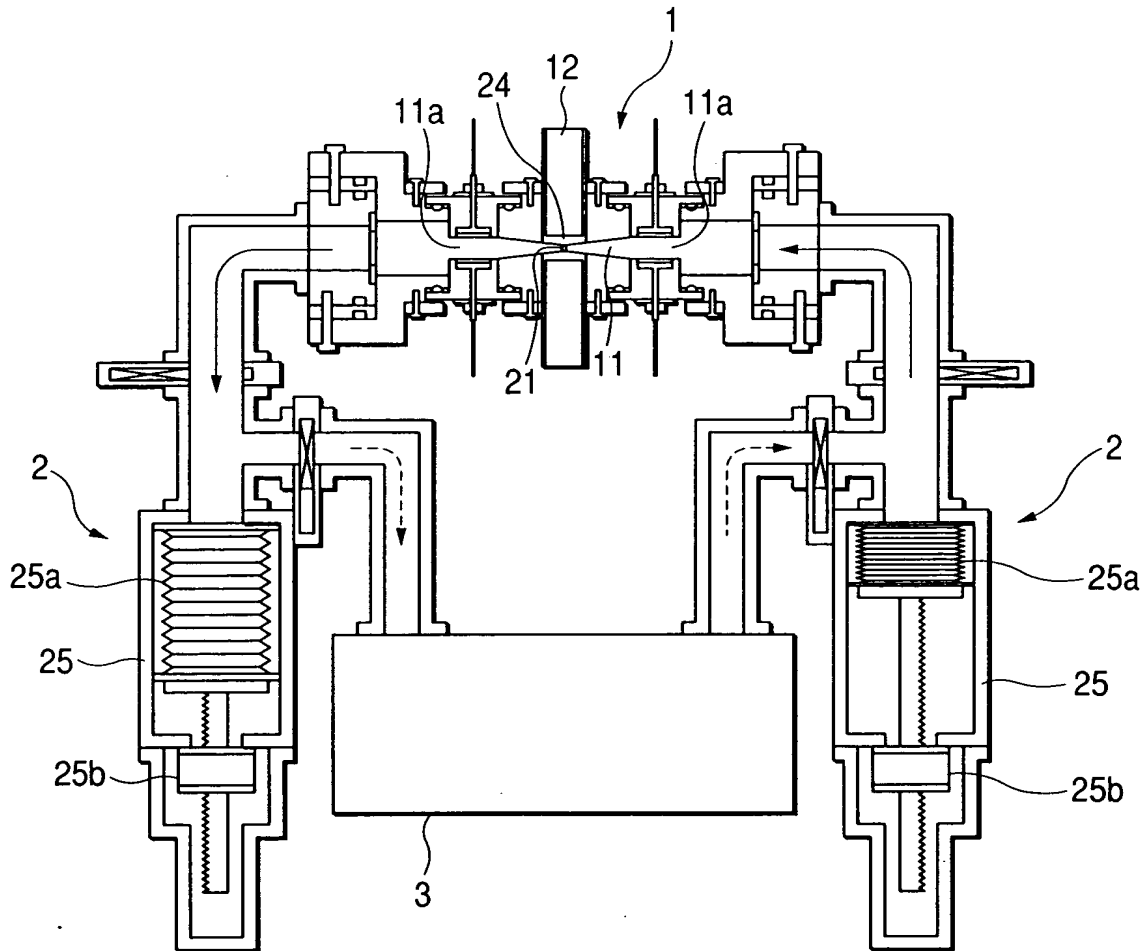


FIG. 2B

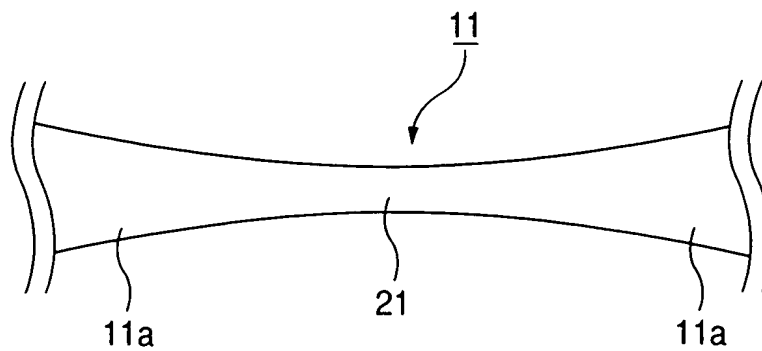


FIG. 3

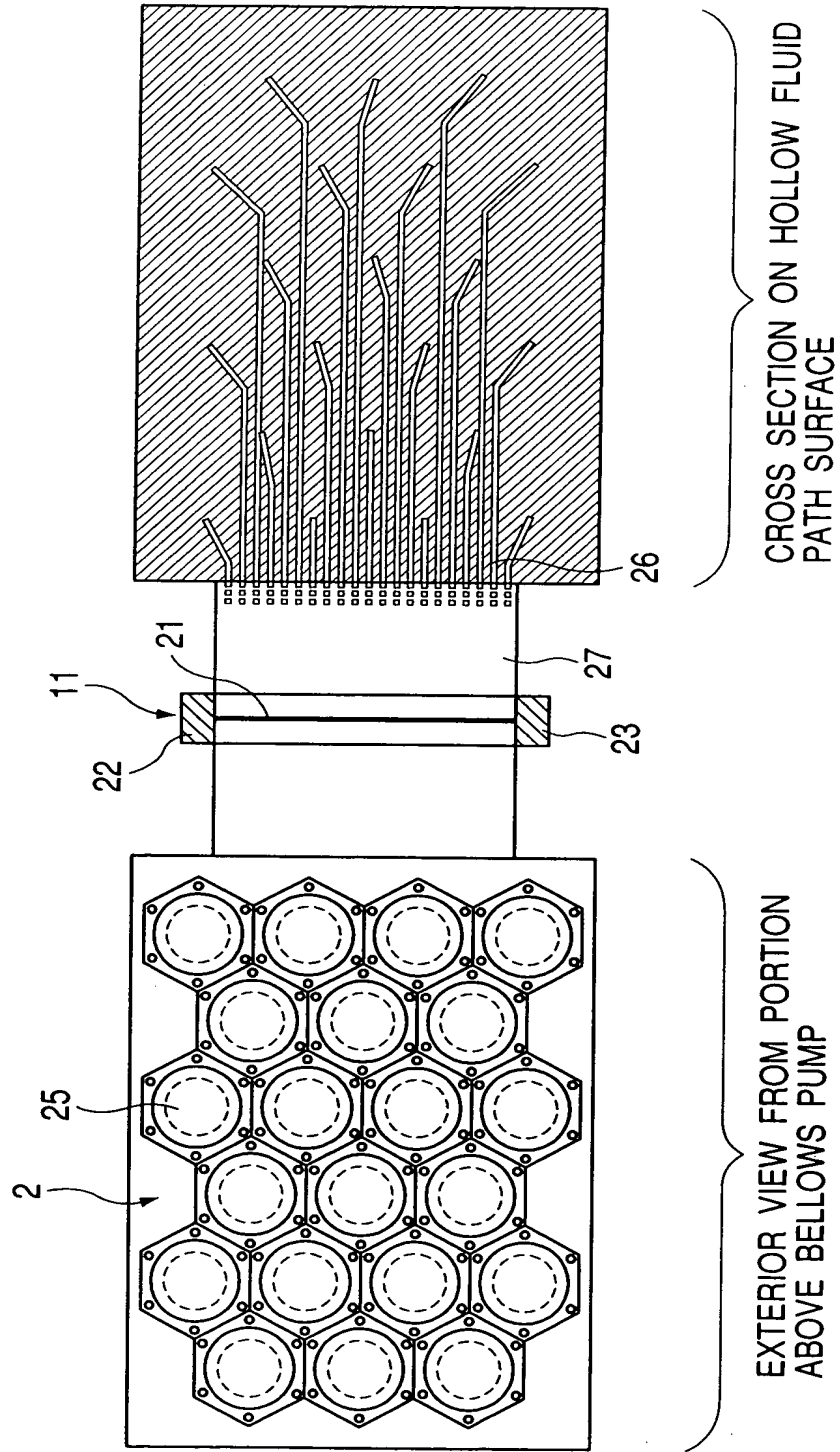


FIG. 4

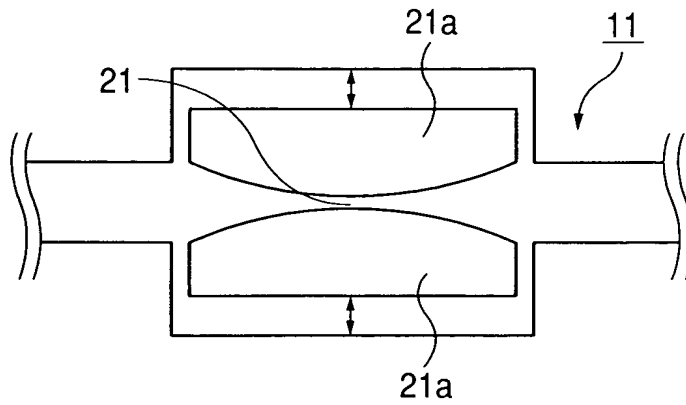


FIG. 5

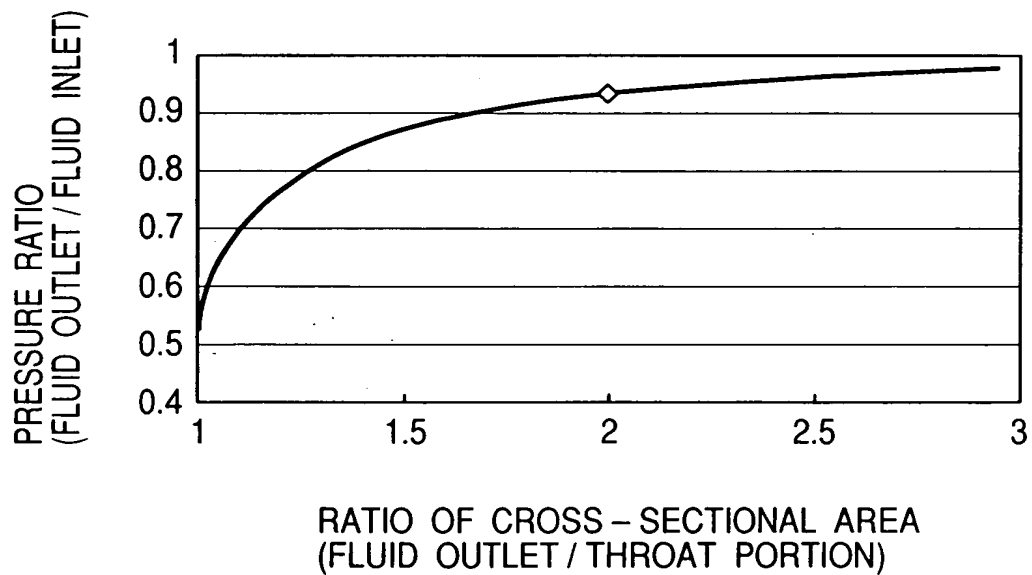




FIG. 6

A		B	
VARIATION OF CROSS SECTION			
	DECREASE OF CROSS - SECTIONAL AREA	INCREASE OF CROSS - SECTIONAL AREA	
	CASE OF SUBSONIC SPEED	CASE OF SUPERSONIC SPEED	
GAS VELOCITY	INCREASE	DECREASE	INCREASE
MACH NUMBER	INCREASE	DECREASE	INCREASE
PRESSURE	DECREASE	INCREASE	DECREASE
DENSITY	DECREASE	INCREASE	DECREASE
TEMPERATURE	DECREASE	INCREASE	DECREASE
SOUND SPEED	DECREASE	INCREASE	DECREASE

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FIG. 7

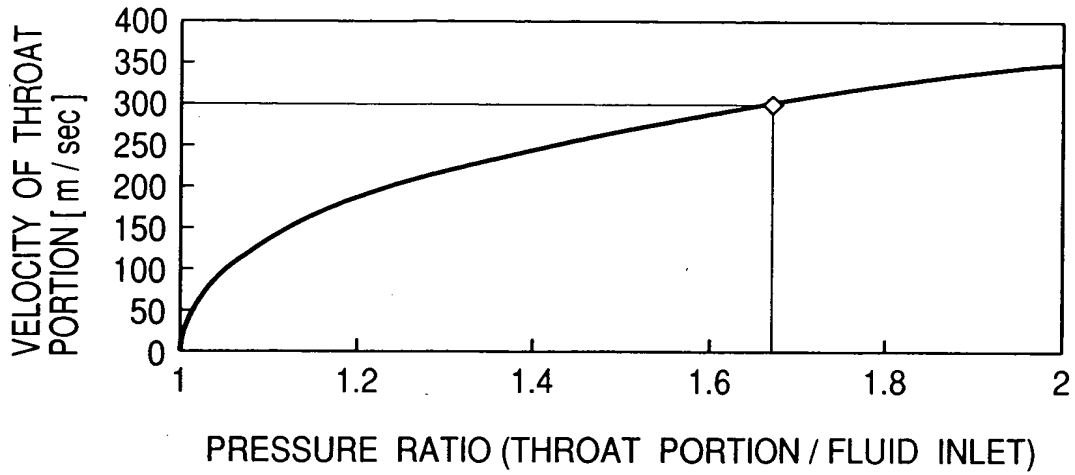
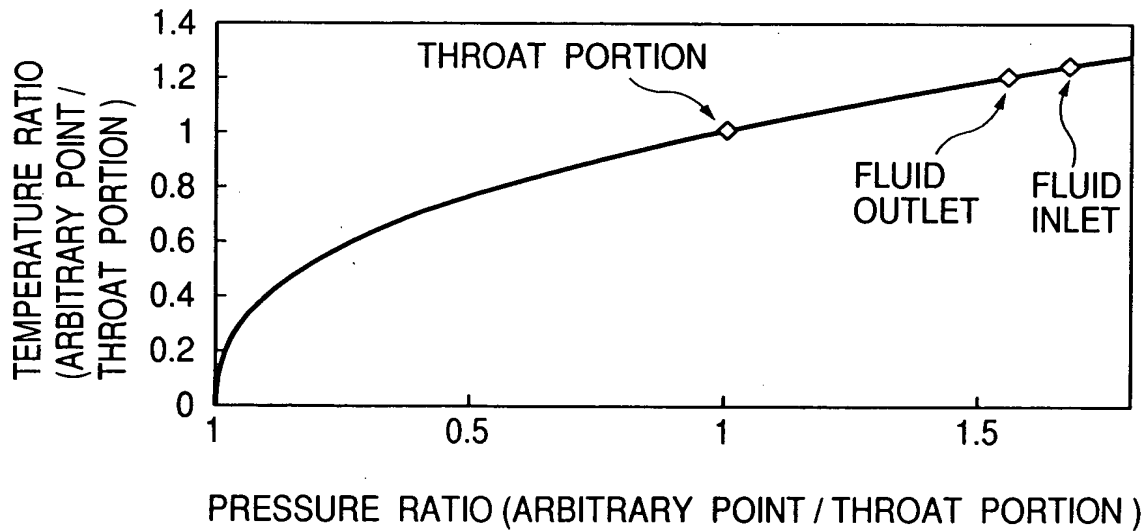


FIG. 8



GAS TEMPERATURE AT FLUID INLET : 25°C
 AT THROAT PORTION : -30.3°C
 AT FLUID OUTLET : 16.9°C

FIG. 9

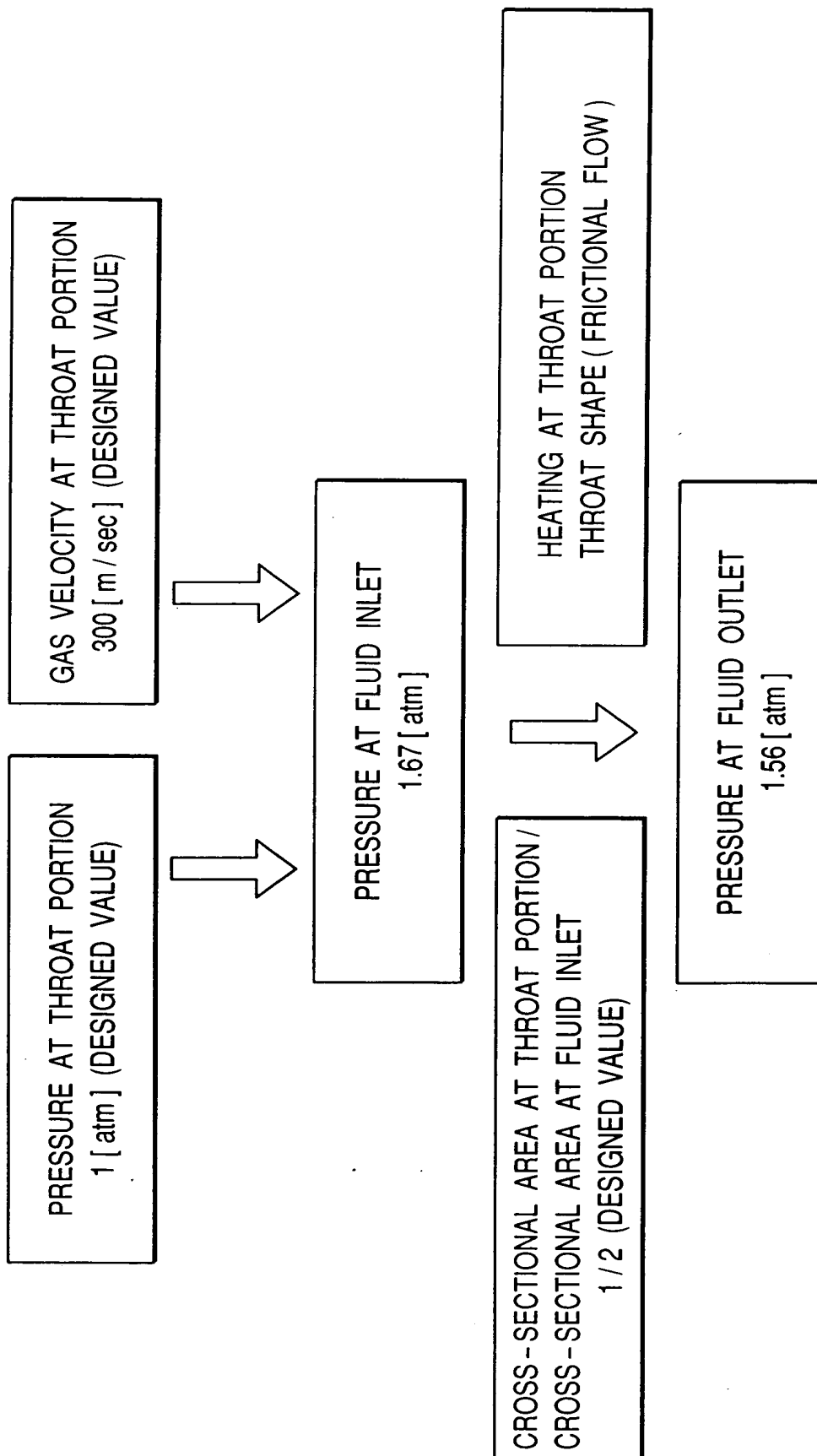


FIG. 10A

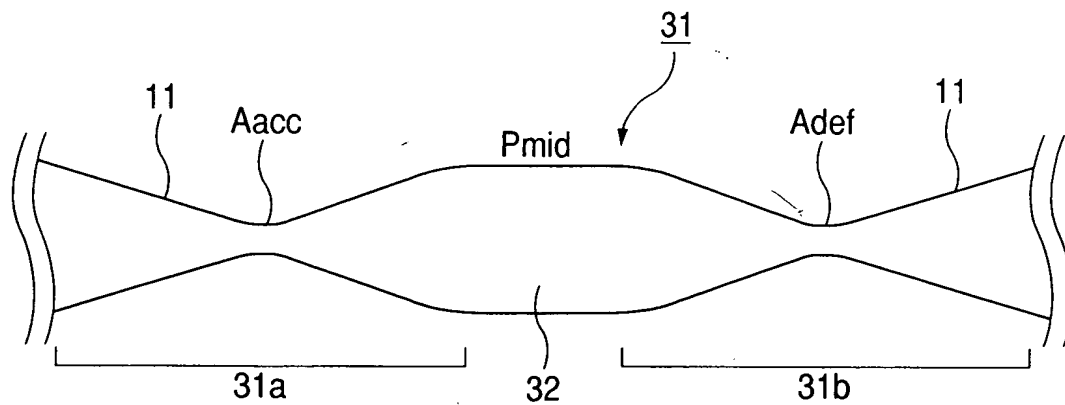


FIG. 10B

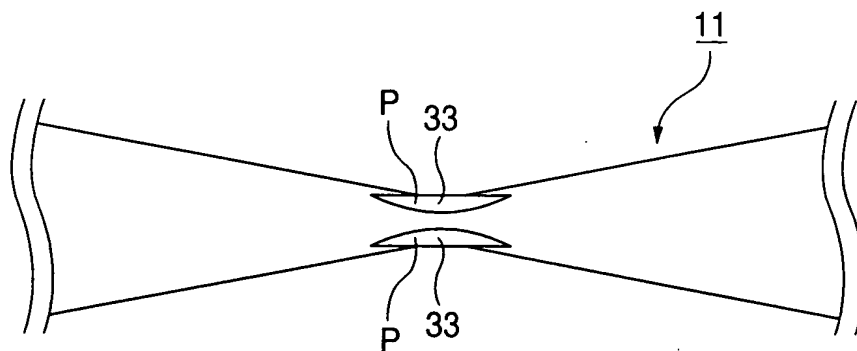


FIG. 11

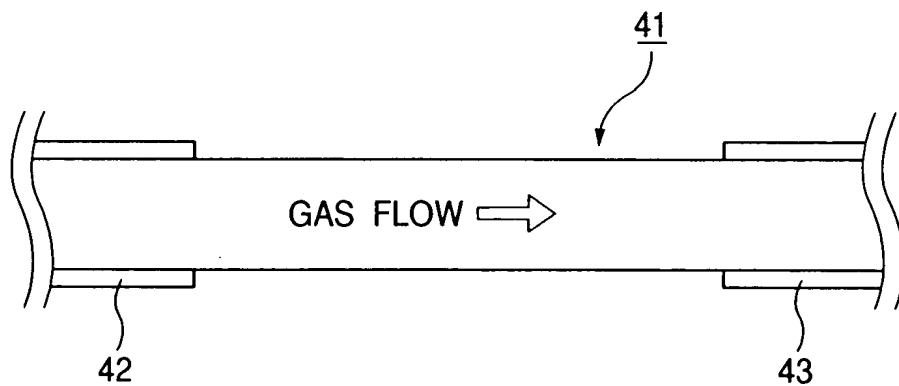


FIG. 12

	A		B	
	HEATING		COOLING	
	CASE OF SUBSONIC SPEED	CASE OF SUPERSONIC SPEED	CASE OF SUBSONIC SPEED	CASE OF SUPERSONIC SPEED
HEAT TRANSFER	INCREASE	DECREASE	DECREASE	INCREASE
GAS VELOCITY	INCREASE	DECREASE	DECREASE	INCREASE
MACH NUMBER	DECREASE	INCREASE	INCREASE	DECREASE
PRESSURE	DECREASE	INCREASE	INCREASE	DECREASE
DENSITY	INCREASE	DECREASE	INCREASE	DECREASE
TEMPERATURE	$M < \gamma^{-1/2}$ INCREASE $\gamma^{-1/2} < M$ DECREASE	INCREASE	$M < \gamma^{-1/2}$ DECREASE $\gamma^{-1/2} < M$ INCREASE	DECREASE
TOTAL PRESSURE	DECREASE	DECREASE	INCREASE	INCREASE
TOTAL TEMPERATURE	INCREASE	INCREASE	DECREASE	DECREASE

$\gamma^{-1/2}$ 0.775 : MONOATOMIC MOLECULE
0.845 : DIATOMIC MOLECULE

FIG. 13

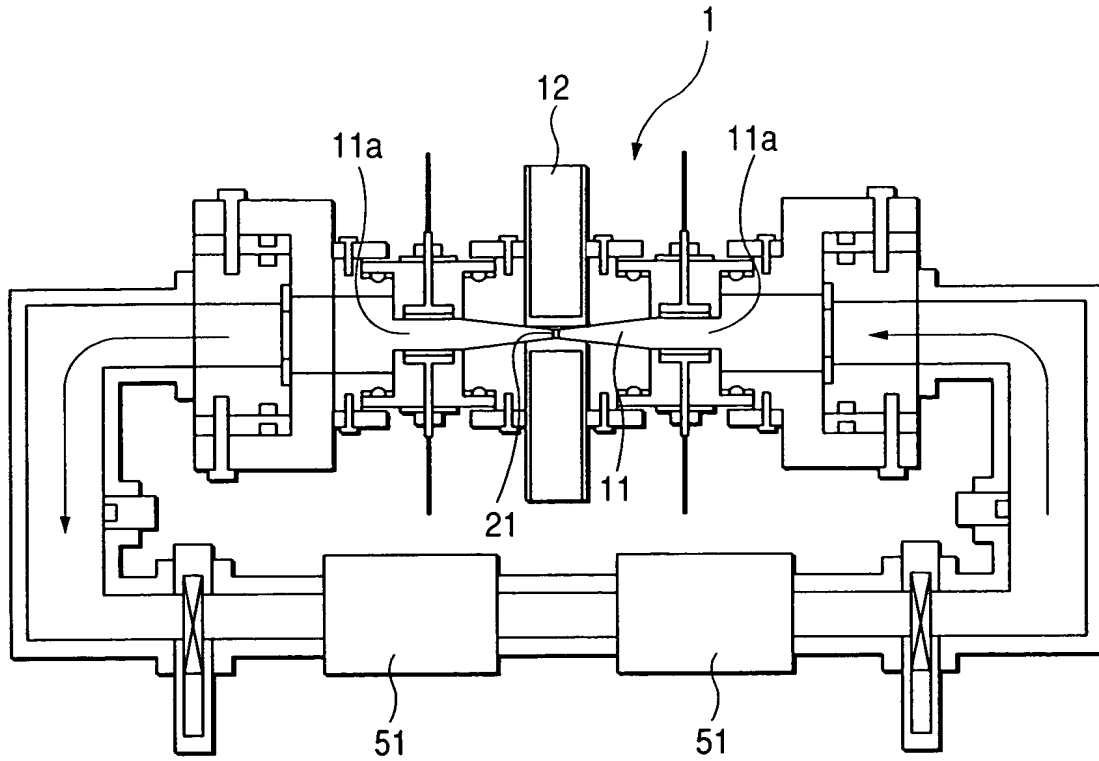
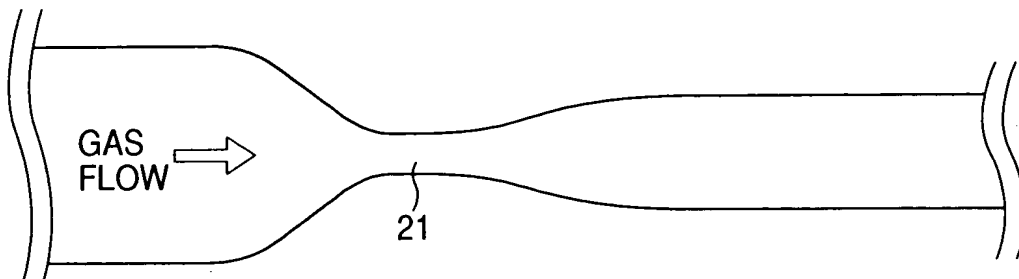


FIG. 14



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DRAFTSMAN		

FIG. 15

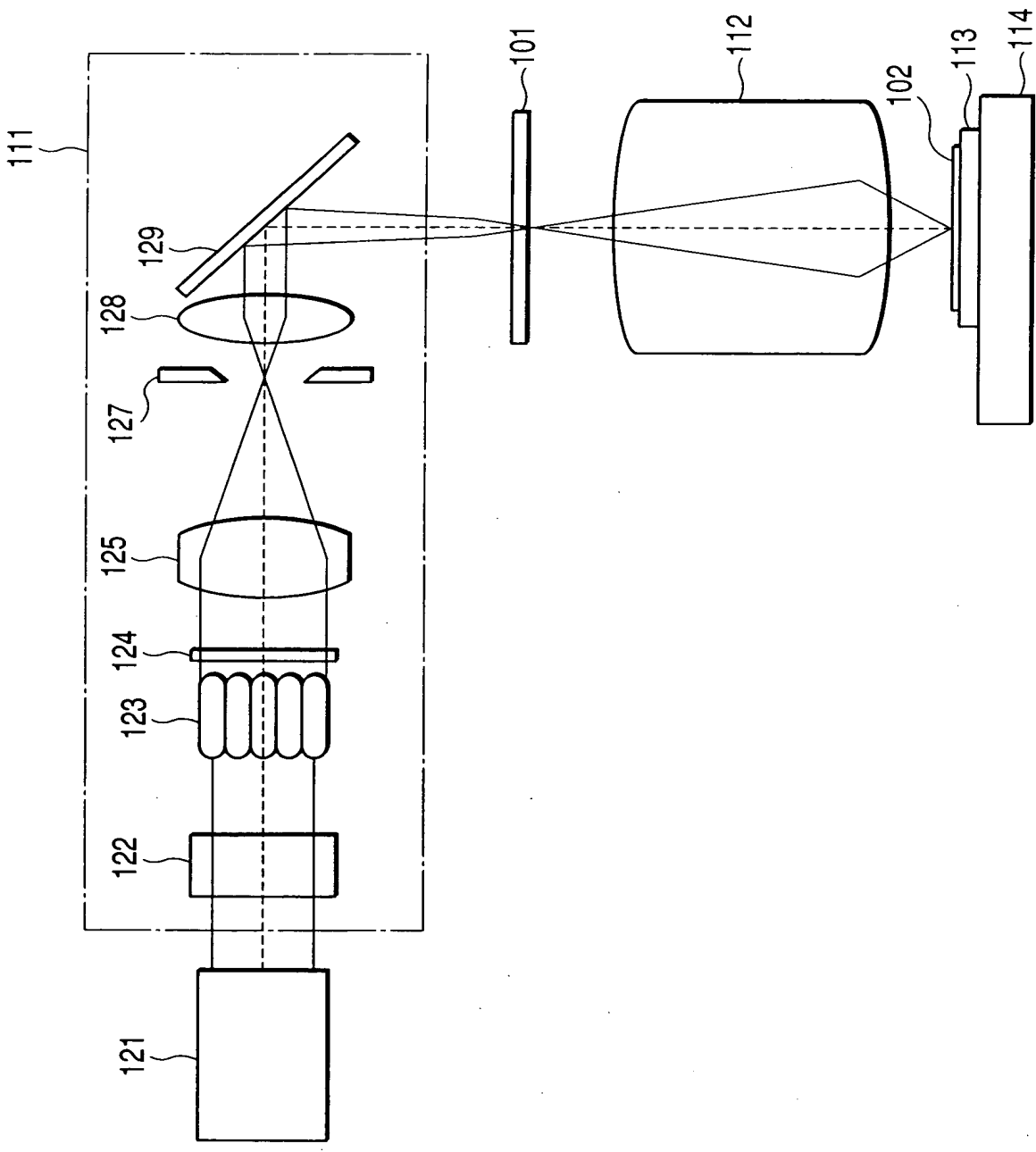


FIG. 16

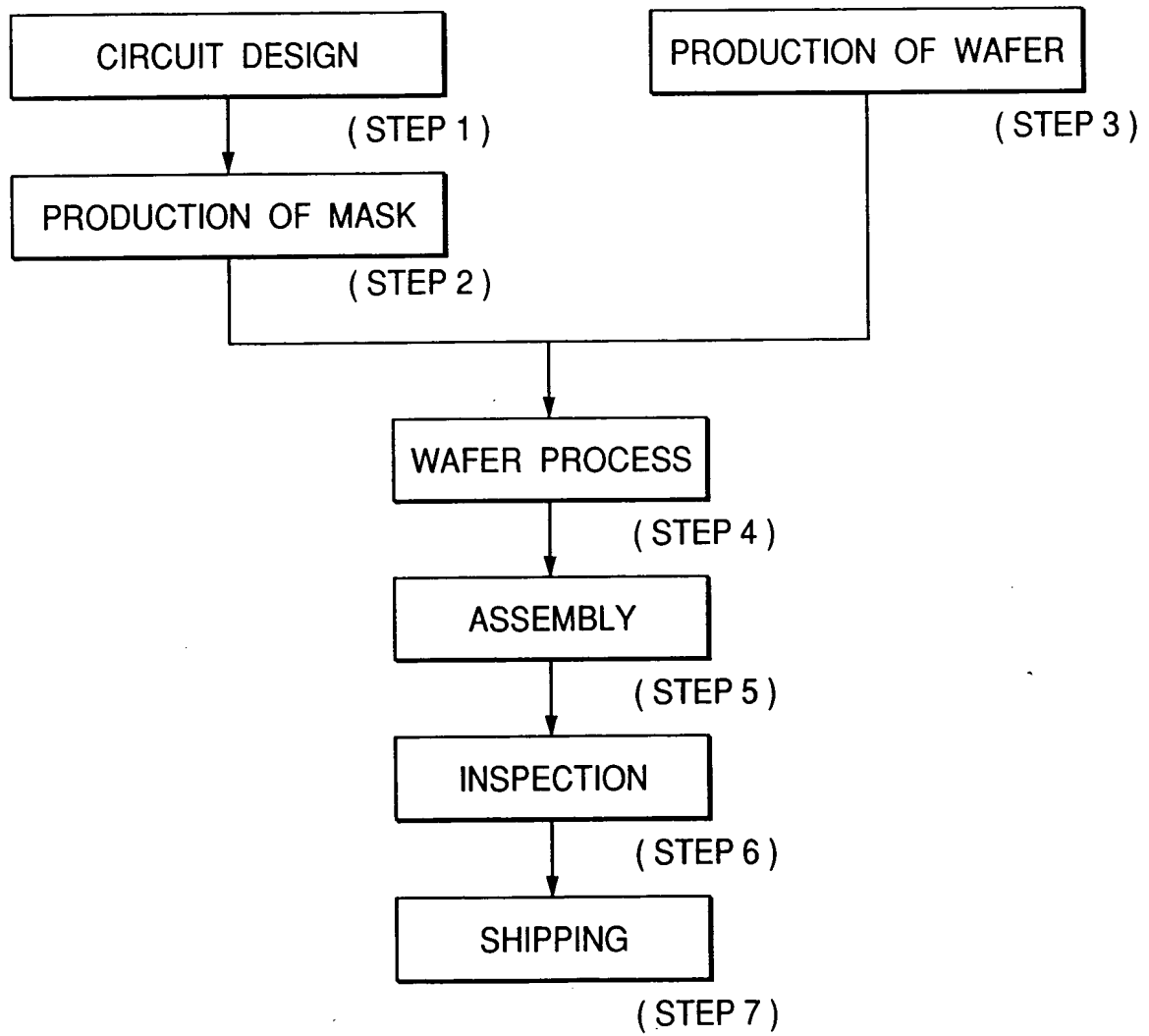


FIG. 17

